1   UNITED STATES DISTRICT COURT

                    DISTRICT OF MASSACHUSETTS

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                                            JUN 2 1 2005
SCANSOFT, INC.,   )

5   )   **BROMBERG & SUNSTEIN**

            Plaintiff,   )

6   )

      v.   )   C.A. No. 04-10353-PBS

7   `

VOICE SIGNAL

8   TECHNOLOGIES, INC.,

     LAURENCE S. GILLICK,   PRESUMED CONFIDENTIAL UNTIL 7/6/2005

9   ROBERT S. ROTH,   PURSUANT TO PROTECTIVE ORDER

     JONATHAN P. YAMRON,

10   and MANFRED G. GRABHERR,

11   Defendants.   )

)   **ORIGINAL**

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16   DEPOSITION OF MANFRED G. GRABHERR, Ph.D., a

17   witness called by and on behalf of the Plaintiffs,

18   taken pursuant to the applicable provisions of the

19   Federal Rules of Civil Procedure, before Dana Welch,

20   CSR, Registered Professional Reporter, and Notary

21   Public, in and for the Commonwealth of Massachusetts,

22   at the offices of Bromberg & Sunstein, 125 Summer

23   Street, Boston, Massachusetts, on June 16, 2005,

24   commencing at 10:04 a.m.

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 1    APPEARANCES:

 2    For the Defendants:

 3         CHOATE, HALL & STEWART, P.C.
           Exchange Place
 4         53 State Street
           Boston, Massachusetts   02109
 5         (617) 248-5000
           By:  Paul D. Popeo, Esq.

 6

      For the Plaintiff:
 7

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           By:  Lisa Fleming, Esq.

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1   I N D E X

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    WITNESS: MANFRED G. GRABHERR, Ph.D.

3   EXAMINATION: PAGE NO.

    By Ms. Fleming   4

4   Certificate of the Reporter   322

5   E X H I B I T S

6   NO.   DESCRIPTION   PAGE NO.

22 Questions Instructed Not To Answer:

23 Page 277/Line 18

24 Page 314/Line 23

Page 4

1   P R O C E E D I N G S

2   (The Massachusetts Driver's License

3   number as identification of the deponent

4   was noted for the record.)

5   WHEREUPON,

6   MANFRED G. GRABHERR,

7   having duly sworn or affirmed that his

8   testimony would be the truth, the whole truth,

9   and nothing but the truth, testified as

10   follows:

11   DIRECT EXAMINATION

12   BY MS. FLEMING:

13   Q.   Would you state your name for the

14   record please and spell it.

15   A.   My name is Manfred Gernot Grabherr.

16   It's M-A-N-F-R-E-D, G-E-R-N-O-T,

17   G-R-A-B-H-E-R-R.

18   Q.   And that's Dr. Grabherr, right?

19   A.   Yes.

20   Q.   Dr. Grabherr, I would like for you to

21   tell me about your educational background after

22   high school and with your collegiate studies.

23   A.   I studied physics at the Technische

24   Universitat Wien, which is the University of

1   computational biology is a very new field which

2   tries to bring together people from different

3   backgrounds. So they want to combine biology

4   with people who know how to write -- to use a

5   computer to do research in the area of -- well,

6   genome research, for instance.

7   So the problem there is that you have a

8   lot of data. If you look at a genome, then the

9   human genome is about three billion letters

10   long, bases. So you need computers to do

11   anything to search or sort of analyze it. So

12   that's the sort of thing.

13   Q. And were you hired by the Broad

14   Institute because you have knowledge and

15   background in computers?

16   MR. POPEO: Objection. Answer the

17   question, if you can.

18   THE DEPONENT: It was a requirement to

19   know how to work with computers.

20   BY MS. FLEMING:

21   Q. It was a requirement?

22   A. Yes.

23   Q. Okay. Now, how long have you been

24   employed at the Broad Institute?

Page 13

1   MR. POPEO: Objection to form. You can

2   answer the question.

3   THE DEPONENT: That's how one can track

4   changes, but I hardly ever use this.

5 BY MS. FLEMING:

6   Q. Okay. But a source, a source control

7 system that you described, would in your

8 experience, is that typically maintained by

9 software companies?

10   MR. POPEO: Object to the form of the

11   question. If you're capable of answering

12   that question, you may do so.

13   THE DEPONENT: A source control system

14   is designed to let companies keep track of

15   their changes they do during software

16   development; that's one of the things; I

17   mean, there's more things, too.

18 BY MS. FLEMING:

19   Q. And the Broad Institute maintains such

20 a source control system; is that your

21 testimony?

22   A. Yes.

23   Q. Now, if you would look at paragraph 2

24 of your affidavit. This indicates that you

1   or correct my question.

2   MR. POPEO: It's only because there's

3   the transcript that she's taking down, so

4   we want Ms. Fleming to finish her question

5   so we can read it clean.

6   BY MS. FLEMING:

7   Q. So again, as I understand your

8   testimony, you did not provide Mr. Roth with a

9   copy of your vitae or resume. Mr. Roth did not

10   ask you about the work that you did at Lernout

11   & Hauspie. But during that interview he

12   offered you a position with Voice Signal

13   Technologies. Is that your testimony?

14   MR. POPEO: Object to the form of the

15   question as it assumes a fact not in

16   evidence. You can respond to the question,

17   if you can.

18   THE DEPONENT: I did not understand you

19   correctly when you said vitae. So I'm sure

20   I gave him some form of a resume of all my

21   previous positions, which basically said,

22   well, I worked in speech recognition at

23   this company, I worked at speech

24   recognition at that company and I worked,

1   his testimony.

2   MR. POPEO: Object to form. That

3   mischaracterizes the testimony.

4   THE DEPONENT: Yeah. If there was ever

5   some doubt, I would assume that it's

6   confidential.

7 BY MS. FLEMING:

8   Q. And did you treat that minor

9 modification that you made at Lernout & Hauspie

10 as confidential?

11   A. Yes.

12   Q. And you never disclosed it to anyone?

13   A. No.

14   Q. Did you disclose it to anyone at

15 Lernout & Hauspie?

16   A. I don't recall. Probably.

17   Q. And what did your minor modification to

18 the short list do, what did it achieve?

19   MR. POPEO: Object to the form. Answer

20   the question, if you can.

21   THE DEPONENT: So from what I remember,

22   I don't remember the specific details, but

23   from what I remember, it reduced the memory

24   usage.

1   you mean in some commercial sense it's

2   beneficial?

3   MR. POPEO: Object to the form of the

4   question. If you know the answer, you may

5   answer.

6   THE DEPONENT: Yes, because ultimately,

7   you don't want speech recognition systems

8   that run on super-high-end computers. You

9   want speech recognition systems that, you

10   know, run on regular PCs; at least that was

11   the goal of Lernout & Hauspie.

12   BY MS. FLEMING:

13   Q. And that was an important goal to the

14   company, wasn't it?

15   MR. POPEO: If you know.

16   THE DEPONENT: In this -- I don't

17   remember what the fact was of this

18   modification. It was not a major thing.

19   It was not something that would make or

20   break, you know, the ability to run on a

21   PC. But a speech recognition system is a

22   very complex thing and you have many, many

23   different --

24

Page 57

1   MR. POPEO: Whether or not -- the

2   nature of the communications that I've had

3   with my client are not a topic of discovery

4   or discussion today.

5   MS. FLEMING: You're disclosing on the

6   record now that you will produce that

7   document on the basis that it's relevant?

8   MR. POPEO: If the document exists, I

9   will determine whether it does exist, and

10   if so, if it responds to any discovery in

11   the case, then we will produce it.

12 BY MS. FLEMING:

13   Q. Dr. Grabherr, do you recall the

14 substance of the agreement that you signed with

15 Kurzweil?

16   MR. POPEO: Objection. You can answer,

17   if you can.

18   THE DEPONENT: I don't remember.

19 BY MS. FLEMING:

20   Q. Was it an employment agreement?

21   A. It was an employment agreement.

22   Q. Did it offer you employment?

23   A. I don't remember what the document

24 said.

Page 58

1   Q.   Did it contain any obligations to keep

2   information confidential that you obtained in

3   your employment with Kurzweil?

4   MR. POPEO: Objection.   Only if you

5   remember.

6   THE DEPONENT: I don't remember.

7   BY MS. FLEMING:

8   Q.   You don't remember?

9   A.   I don't remember any specific things

10   about this document.

11   Q.   You don't remember if you were under

12   any obligations to keep information

13   confidential while you worked at Kurtzweil?

14   MR. POPEO: That wasn't the question.

15   That's a different question.   You can

16   answer that question, if you know the

17   answer to it.

18   THE DEPONENT: It very much depends on,

19   you know, what the document says and what

20   the wording is.   I assume that there was

21   something in there that --

22   MR. POPEO: Just what you remember,

23   please.

24

1   BY MS. FLEMING:

2   Q. Let's put the document aside. Do you

3   remember or do you recall whether you were

4   under any obligation to maintain as

5   confidential any information you received as

6   part of your employment with Kurzweil?

7   MR. POPEO: Object to the form. Do you

8   recall, that's the question.

9   THE DEPONENT: I recall that was my

10   understanding that I should keep

11   confidential information confidential.

12   BY MS. FLEMING:

13   Q. Okay. And is it your understanding

14   that Lernout & Hauspie acquired Kurzweil after

15   you received that Kurzweil agreement?

16   MR. POPEO: Objection. Asked and

17   answered.

18   MS. FLEMING: That wasn't asked and

19   answered.

20   BY MS. FLEMING:

21   Q. You can answer.

22   A. I don't remember exactly that the flow

23   of events was. So again, it might have been

24   Kurzweil when I signed this; it might have been

1   Q.   What in particular did you do for

2   Lernout & Hauspie?

3   MR. POPEO: Object to the form.   Answer

4   if you can.

5   THE DEPONENT: Okay.   So from what I

6   remember, I worked on two projects.   Again,

7   I worked in the recognition development

8   group.   So I worked on Voice Xpress.   I

9   think there were different versions of

10   Voice Xpress.   And at some point I worked

11   at the Phoenix project.

12   BY MS. FLEMING:

13   Q.   What was the Voice Xpress project?

14   A.   Voice Xpress is a large-vocabulary

15   dictation speech recognition system.   And --

16   sorry.   Can you say the question again?

17   MS. FLEMING: Can you read it back,

18   please.

19   (Preceding question was read by the

20   stenographer.)

21   THE DEPONENT: Okay.   Voice Xpress was

22   -- was a product that would allow users to

23   use a microphone and use a large-vocabulary

24   continuous speech recognizer to enter text

Page 63

1   been developed mostly by research people in the

2   beginning. And the reason why this would be

3   desirable is that at some point I remember it

4   became really hard to maintain the code base.

5   So whenever a new algorithm would

6   become available, then it was very hard to put

7   it in because the design was -- it was just not

8   well designed at all. And it was a very kind

9   of monolithic thing. And there was this desire

10   to make the structure more modular, just more

11   maintainable.

12   Q. Well, wasn't, in fact, the Phoenix

13   project designed to rewrite Voice Xpress for

14   hand-held units?

15   MR. POPEO: Object to the form of the

16   question. If you agree with that, you can

17   say so.

18   THE DEPONENT: The second purpose of

19   Phoenix was to be able to run speech

20   recognition on hand-held computers. There

21   was kind of this -- the second idea behind

22   this project.

23   BY MS. FLEMING:

24   Q. And you worked on Voice Xpress?

1   point became known as ELVIS.   And I don't know

2   exactly when it made the transition from just

3   being a recognizer to being ELVIS.

4   Q.   Okay.   And what language model was used

5   in the ELVIS technology that you're aware of

6   from October of 2000 to October of 2001?

7   MR. POPEO: I object the form of

8   question.   You may answer -- you may

9   answer --

10   MS. FLEMING: Mr. Popeo, please.

11   MR. POPEO: You may answer if you can

12   do so without divulging any Voice Signal

13   trade secret.   With that instruction, you

14   can go ahead.

15   THE DEPONENT: Sorry.   The question

16   again, please?

17   THE REPORTER: "Question: 'Okay.   And

18   what language model was used in the ELVIS

19   technology that you're aware of from

20   October of 2000 to October of 2001?'"

21   THE DEPONENT: This kind of a language

22   model was the just straightforward thing

23   that's published, that stores probabilities

24   for words and word translations.

1   believe was proprietary.

2   BY MS. FLEMING:

3   Q.   And is it your testimony that the

4   storage of language models at Lernout & Hauspie

5   was not proprietary to Lernout & Hauspie?

6   A.   I don't think -- it was not

7   proprietary.

8   Q.   You think it was proprietary?

9   A.   No.   I think it was not proprietary.

10   Q.   So I just want to be clear that I

11   understand your testimony, that the way that

12   Voice Signal Technologies, as you understand

13   it, stored its language models was proprietary,

14   but the way that Lernout & Hauspie stored its

15   language models was not; is that your

16   testimony?

17   A.   Yes.

18   MR. POPEO: Objection.

19   THE DEPONENT: Because it's different.

20   BY MS. FLEMING:

21   Q.   Why is it different?

22   MR. POPEO: You can answer the question

23   without talking about Voice Signal's

24   methodology.

Page 93

1   MS. FLEMING: Excuse me. Mr. Popeo,

2   have you just instructed the witness not to

3   talk about Voice Signal's technology with

4   respect to language models in the first

5   year of employment of Mr. Grabherr?

6   MR. POPEO: I'm just reminding him not

7   to disclose trade secrets of Voice Signal.

8   But you can answer the question.

9   THE DEPONENT: Okay. So --

10   MS. FLEMING: You're reminding him not

11   to disclose trade secrets within the first

12   year of his employment; is that -- am I

13   understanding your instruction?

14   MR. POPEO: The witness may be capable

15   of answering the question without

16   disclosing trade secrets.

17   MS. FLEMING: No. Is your instruction

18   that he not disclose trade secrets during

19   the first year of his employment at Voice

20   Signal Technologies; Is that your

21   instruction, Mr. Popeo?

22   MR. POPEO: My instruction to the

23   witness and general instruction is that he

24   not disclose trade secrets as a general

Page 94

1   matter.

2   MS. FLEMING: Despite the Court's order

3   in this case?

4   MR. POPEO: I'm not aware of any court

5   order that says that we ought to be

6   disclosing trade secrets.

7   THE DEPONENT: I think I can answer the

8   question without disclosing confidential

9   information.

10   So you have to keep in mind that these

11   recognizers are really intended for very

12   different purposes.

13   BY MS. FLEMING:

14   Q.   What recognizers?

15   A.   So on one hand, you have L&H Voice

16   Xpress, and also later on, the Phoenix

17   recognizer, and the intention there was to run

18   in a -- in an environment in which you have an

19   operating system, you have file storage of some

20   sort, you have a pretty fast processor and you

21   have a lot of memory.

22   Now, on the other hand, if you look at

23   the ELVIS recognizer, that was designed to run

24   on embedded systems such as cell phones, where

Page 112

1   MR. POPEO: Objection. You can answer

2   the question.

3   THE DEPONENT: I'm sorry. Can you

4   rephrase that?

5 BY MS. FLEMING:

6   Q. You testified earlier that you had

7 access to Voice Signal Technologies source

8 code; is that right?

9   A. I had access to source, yes.

10   Q. The speech recognition source code?

11   A. At Voice Signal?

12   Q. Yes.

13   A. Yes.

14   Q. Okay. And were there components of

15 that source code that disclosed what the

16 acoustic modeling was?

17   MR. POPEO: Object to the form. You

18   can answer it if you can.

19   THE DEPONENT: I don't know if I can

20   answer this question. I mean, in the sense

21   that -- so it used this triphone

22   clustering. So if you look at the source

23   code, you will probably be able to tell

24   that it's a triphone-based system and not

1   Q.   Okay.   I'd ask you just to focus on the

2   first sentence here and ask you, what work did

3   you specifically do to research and develop

4   robust speech interfaces to mobile and embedded

5   products at Voice Signal Technologies?

6   MR. POPEO: Object to the form of the

7   question.   You can answer.   Please restrict

8   your answer to the first 12 months after

9   you were hired and don't disclose Voice

10   Signal trade secrets in the process.

11   THE DEPONENT: So the question is what

12   project was I working on; is that correct?

13   BY MS. FLEMING:

14   Q.   No.   The question is a little bit more

15   specific than that.   What work did you do to

16   research and develop robust speech interfaces

17   to mobile and embedded products?

18   MR. POPEO: Same objection.   You can

19   answer.

20   THE DEPONENT: Okay.   Yeah, when I

21   started working for Voice Signal, there

22   were a number of things Voice Signal wanted

23   to do and all of them were for embedded

24   applications.

Page 128

1   BY MS. FLEMING:

2   Q. You don't know how to spell his last

3   name, do you?

4   A. I do, actually. It's

5   Z-L-O-K-A-R-N-I-K.

6   Q. Anybody else?

7   A. I hope I got it right.

8   Q. That's okay. We can correct it.

9   Anyone else?

10   A. There was Bahman Farahani.

11   B-A-H-M-A-N, F-A-R-A-H-A-N-I.

12   Q. Anyone else?

13   A. Yes. There was Paul Silvis.

14   Q. S-I-L-V-I-S.

15   A. Ark Khasin. A-R-K, K-H-A-S-I-N.

16   Q. N or M?

17   A. N.

18   Q. Okay.

19   A. And --

20   MR. POPEO: Only if you can recall.

21   It's not a memory test.

22   THE DEPONENT: Okay. So I think there

23   might have been other people, but I don't

24   remember. I think there was the core

1   group.

2   BY MS. FLEMING:

3   Q.   You don't remember? Upon that

4   instruction of your counsel, you don't remember

5   any other names?

6   MR. POPEO: I object to the

7   characterization.

8   THE DEPONENT: No. Wait, wait, wait.

9   MR. POPEO: If you can recall, then you

10   should tell her. If you can't recall, then

11   you should tell her you can't recall.

12   THE DEPONENT: It was a fairly small

13   team and you have, including myself, five

14   people already and I think that was about

15   right. There might have been some other

16   people getting pulled into this every once

17   in a while. I don't think there were any

18   kind of regular people on the team.

19   BY MS. FLEMING:

20   Q.   Do you know the names of the people

21   that might have been pulled in that might not

22   have been regular members of the team?

23   A.   Well, one of them --

24   MR. POPEO: I object. Don't guess. If

Page 130

1   you know, you may answer the question.

2   THE DEPONENT: One of them I remember

3   is Jim McGinnis.

4   BY MS. FLEMING:

5   Q.   Tim?

6   A.   Jim. M-C-G-I-N-N-I-S. I hope that's

7   the proper spelling. And for the more

8   technical questions, we also had embedded

9   engineers help us; but those I don't remember

10 specifically.

11   Q.   Okay. And can you tell me what your --

12 specifically what your work was on this team?

13   A.   So my work on this team was to

14 contribute to the design process and also

15 implement certain parts.

16   Q.   Okay. Let take each of those tasks

17 that you just described. What did you do

18 specifically to contribute to the design

19 process of the recognizer?

20   MR. POPEO: Objection. Please restrain

21   yourself to the first 12 months after you

22   were hired and please don't disclose any

23   trade secrets.

24   THE DEPONENT: I don't remember the

Page 131

1   specific things that I contributed. This

2   was -- we had a lot of meetings where we

3   were just talking. And I can't really say

4   whose idea was what. And sometimes that's

5   also not the way it works, because somebody

6   says, oh, I have an idea, and somebody else

7   says, oh, that doesn't work, but if we do

8   this then all of a sudden this becomes a

9   more feasible thing to do.

10   BY MS. FLEMING:

11   Q. And did you understand when you were

12   having those meetings that you were sharing

13   confidential information?

14   MR. POPEO: Object to the form of the

15   question. If you understand it, you can

16   answer.

17   THE DEPONENT: You mean confidential

18   information from who?

19   BY MS. FLEMING:

20   Q. From anyone on the team.

21   MR. POPEO: Same objection. If you

22   understand you can answer.

23   THE DEPONENT: I don't -- can you

24   rephrase the question?

1   BY MS. FLEMING:

2   Q.   Sure.   When you worked on this team and

3   you were part of this team, was it your

4   understanding that you were developing -- well,

5   in fact, you said you were developing a speech

6   recognizer, correct?

7   A.   Yes.

8   Q.   And you were contributing to the design

9   process of that speech recognizer, correct?

10   A.   Yes.

11   Q.   And as part of your contributions to

12   the design process, did you understand that the

13   information you were developing was

14   confidential to Voice Signal Technologies?

15   A.   Yes.   That was my understanding, right.

16   Q.   And what information in particular was

17   confidential if you can recall?

18   MR. POPEO: I object to the form of the

19   question.   If you can answer the question

20   without divulging the confidential

21   information itself, you can do so.

22   THE DEPONENT: Well, a lot of it is,

23   well, how do you actually make this run in

24   very little memory.   So rather than --

Page 133

1   there are two ways to approach this. And

2   one is to start with something that's big

3   and make it small; and the other one is

4   start with something that's supposed to be

5   small in the beginning. And the second way

6   is usually what works much better.

7   So a lot of this means you have to

8   structure things in certain ways so that

9   you keep one part of information here and

10   another part of the information there.

11   Because the hope is that, you know, if you

12   also have to distinguish between memory

13   you can write to and memory you cannot

14   write to. And you don't want to keep

15   anything you don't -- are not going to

16   modify in memory you can write to because

17   that's precious. And so that requires you

18   to structure this in a certain way.

19   BY MS. FLEMING:

20   Q. What way?

21   MR. POPEO: Objection. Again, if you

22   can answer the question without divulging

23   trade secrets, you may do so. But please

24   don't describe a trade secret.

Page 134

1   THE DEPONENT: So it can -- you have to

2   organize your memory so that you're not

3   wasting anything, there is no overhead. So

4   one classical thing is you have an array of

5   things and you want to look up information

6   in there. Sometimes it's helpful if you

7   have something like an index table where

8   you say, oh, I'll just look up the index

9   first, that gets me right to where I want

10   to get this information, right.

11   So it's like, you know, if you have a

12   phone directory, then you can look it up --

13   maybe that's not a good analogy. But

14   anyway. But it makes it much faster, but

15   you have to be willing to spend the memory

16   on your index table.

17 BY MS. FLEMING:

18   Q. How does it make it faster?

19   A. The alternative is if you do it the

20 simple way, you have to go through each

21 individual entry that you're looking for and

22 that takes a long time if you have a record of

23 these things.

24   Q. And what method did this team employ to

1   make it go faster?

2   MR. POPEO: Object to the form. You

3   may answer the question, but please don't

4   divulge a trade secret when you do so.

5   THE DEPONENT: No. I'm just using this

6   as an example. So I'm not saying this is

7   one of the particular problems.

8 BY MS. FLEMING:

9   Q. Let me ask you a question, sir. In

10 forming your answer to this question and the

11 previous two questions, have you -- is part of

12 your answer based on confidential information

13 that you have not disclosed to me?

14   MR. POPEO: Object to the form of the

15   question. If you understand it, you can

16   answer it.

17   THE DEPONENT: Well, a lot of it has to

18   do with the fact that I just can't remember

19   the specifics of what we did. I mean, if

20   you ask me -- if you tell me now, show me

21   the source code and say, oh, okay.

22 BY MS. FLEMING:

23   Q. If I showed you the source code?

24   A. If you showed me the source code and

Page 136

1   tell me, well, this is the way you did it, I

2   would say yes, now I remember. But out of the

3   top of my head, I just don't remember these

4   things because they're very -- sometimes very

5   small details.

6   Q.   Sure. So without looking at the source

7   code, you can't recall what the specific

8   contributions were this team made in the early

9   speech recognition engine that was being

10   developed as part of this team that you just

11   testified about?

12   MR. POPEO: Object to the form of the

13   question. It mischaracterizes. You can

14   answer the question if you can.

15   THE DEPONENT: And one thing that I

16   remember is that we went through each

17   possible data structure and tried to figure

18   out how can we organize this such that it

19   takes up the least amount of memory.

20   BY MS. FLEMING:

21   Q.   And do you recall what techniques you

22   came up with?

23   MR. POPEO: Object to the form. Again,

24   if you can answer the question without

Page 137

1   divulging a trade secret you may do so.

2   BY MS. FLEMING:

3   Q. Can you answer that question with

4   divulging a trade secret?

5   MR. POPEO: In other words, if you're

6   remembering a trade secret --

7   MS. FLEMING: Excuse me, sir; it's my

8   question.

9   THE DEPONENT: No, I understand. No, I

10   don't think I could.

11   BY MS. FLEMING:

12   Q. You can't answer that question with or

13   without confidential information?

14   A. Right.

15   MS. FLEMING: Okay. Can you read me

16   back the question?

17   THE REPORTER: "Question: 'And do you

18   recall what techniques you came up with?'"

19   BY MS. FLEMING:

20   Q. Why can't you answer that question?

21   A. Because I simply don't remember. I

22   mean, see, these are very detailed things that

23   we did.

24   Q. And you can't remember unless you

Page 139

1   recall the specific techniques that the team

2   came up with in those early stages to build the

3   speech recognition engine; is that right?

4   A.   That's right.

5   Q.   And it would be helpful if you had the

6   source code to look at to determine whether it

7   would refresh your memory, correct?

8   MR. POPEO: Object to the form of the

9   question. You can answer it, if you can.

10   THE DEPONENT: If I were to look at the

11   source code, then probably a lot of it

12   would come back, yes.

13   BY MS. FLEMING:

14   Q.   Okay. Now --

15   MR. POPEO: Let's take a break whenever

16   you have a chance. It's after 1:00.

17   MS. FLEMING: Do you want to take a

18   lunch break. It's 1:00 now.

19   THE DEPONENT: That would be good.

20   MS. FLEMING: How long would you need?

21   MR. POPEO: 45 minutes maybe.

22   MS. FLEMING: So we'll come back

23   at 1:45.

24

Page 156

1   So what people have found to be helpful

2   for speech recognition is to look at, let's say

3   three of these vectors at a time, and also

4   compute the differences between them. And they

5   call it the deltas because it's kind of a

6   difference. It basically says well, how much

7   do the values change over time.

8   Q. Uh-huh.

9   A.   Right. And then there's another

10   technique which some people use, others

11   don't --

12   Q. Before you move on, are you moving off

13   of what is a generic speech recognizer into

14   something else?

15   A. No. It's just -- I mean, a generic

16   speech recognizer, there are many techniques

17   that people choose to use or don't use.

18   Q. But if I understand your testimony up

19   to the point of describing vectors, you've

20   given me a piece of what the recognizer does,

21   is that right, a very small piece?

22   A. A generic recognizer, yes.

23   Q. And --

24   MR. POPEO: I think he's trying to tell

1   you that there might be more than one

2   generic approach. But you can answer.

3   BY MS. FLEMING:

4   Q. And when these vectors -- when the

5   recognizer has these vectors that it has

6   comprised, are they associated with some

7   probability?

8   A. No. Well, these vectors, what they

9   represent at that point is how much of the

10   speech signal is in a certain frequency range.

11   So I don't know how one would introduce

12   probabilities at this point.

13   Q. Okay. Then I misunderstood. So let

14   me --

15   A. Okay.

16   Q. What is the next piece of what happens

17   in a speech recognizer once the vectors are

18   determined?

19   A. Right. So a generic recognizer for

20   being able to recognize something, needs a --

21   some sort of vocabulary. Right. So what is a

22   vocabulary. A vocabulary is sometimes usually

23   how the word is spelled, so you want to keep

24   this information because you want to know what

1   embedded products.   And you were describing the

2   different products that Voice Signal

3   Technologies, to your understanding, had at the

4   time you joined the company.

5   Did -- to your knowledge did Voice

6   Signal Technologies have any embedded products

7   in the automotive field or for use in

8   automobiles?

9   MR. POPEO: Objection.   Answer --

10   THE DEPONENT: To the best of my

11   knowledge, no.

12   BY MS. FLEMING:

13   Q.   Okay.   Now, the second question -- I'm

14   sorry -- the second statement in that

15   description says that "Your work will focus on

16   challenges of implementing multilingual large-

17   and small-vocabulary speech engines on embedded

18   platforms."   Do you see that?

19   A.   Yes.

20   Q.   Okay.   And can you tell me what work

21   specifically you did to focus on those

22   challenges?

23   MR. POPEO: Object to the form of the

24   question.   You can answer it, if you can.

Page 164

1   might make sense to run a large-vocabulary on?

2   MR. POPEO: As of the date of the

3   agreement?

4   BY MS. FLEMING:

5   Q. At the time you were reviewing this job

6   description.

7   A. I can't remember any other devices.

8   Q. And so I ask you now, what work you did

9   in particular to focus on those challenges?

10   MR. POPEO: Object to the form of the

11   question. You may answer, if you can.

12   THE DEPONENT: So we already talked

13   about the design process. And I did the

14   implementation of some source code in their

15   ELVIS recognizer.

16   BY MS. FLEMING:

17   Q. And when you say you did the

18   implementation of some source code, what do you

19   mean by that, sir?

20   A. I wrote parts of ELVIS.

21   Q. What parts of ELVIS did you write?

22   MR. POPEO: Objection. You may answer.

23   Please restrain yourself to the first 12

24   months after you were hired.

Page 178

1   it might be different triphones, you start

2   splitting them. And by doing that you can --

3   you get this restructure.

4   And you start searching at the

5   beginning, the roots of the tree. And once you

6   determine that a certain path, no matter how

7   many words end there are at the leaf outs, once

8   you determine that, there's no point in

9   searching any further because the scores have

10   gone too bad, then you can stop there.

11   Q.   So the idea is to eliminate some of

12   those hypotheses, isn't it?

13   A.   Yes.

14   Q.   Then you can go through the tree faster

15   than if you had all those hypotheses in there

16   that you had to go through, right?

17   A.   Right. Because you don't have that

18   many root nodes, so it doesn't make much sense

19   to search the word "green" and then "greedy"

20   twice if they're the same at the beginning; so

21   you can reduce the number of hypotheses.

22   Q.   And how do you write code to build a

23   lexical tree?

24   MR. POPEO: Object to the form. You

1   can answer, if you can.

2   THE DEPONENT: So what you do is

3   probably you take the first word of your

4   dictionary. You take the second word of

5   your dictionary and compare it to the first

6   one. If they're totally different, then

7   you have two different entries. Now you

8   have two root nodes.

9   Then you take the third word. And you

10   say, well, can I match this in here? No.

11   Can I match this in here? Yes. But they

12   split after the second phoneme. Then you

13   take the next word out of your dictionary

14   and you just build this lexical tree.

15   BY MS. FLEMING:

16   Q. And is that how you built the lexical

17   tree for this particular module for ELVIS?

18   MR. POPEO: Objection to form.

19   THE DEPONENT: I don't remember that.

20   It might be.

21   BY MS. FLEMING:

22   Q. You don't remember how you built it?

23   A. I might have done just that. I don't

24   remember if I did anything else.

Page 183

1   about how you build a lexical tree.

2   A.   The algorithm that I just described is

3   one algorithm to build a lexical tree. All

4   right. Now, one can think of different

5   algorithms of building a lexical tree. Like

6   you can, for instance, take your vocabulary and

7   sort it which makes it somewhat easier; so

8   that's another way of building this.

9   And I'm sure you can come up with very

10   different ways of building trees that are not

11   known to the public domain. But again, as long

12   as you end up with the same tree.

13   Q.   Understood. And you said that you can

14   build it in such a way that it becomes easier.

15   What do you mean by that?

16   MR. POPEO: Objection to form. Answer,

17   if you can.

18   THE DEPONENT: Okay. What I -- it's

19   not -- okay. If you sort the dictionary

20   before, you do the same thing that I

21   described before. Then what happens is

22   that you don't have to search all the root

23   nodes necessarily in order to build this,

24   which might make it a tiny little bit

1   BY MS. FLEMING:

2   Q.   I imagine that all of these scores are

3   computed.

4   A.   Yes.

5   Q.   And then you're left in the module with

6   a number of scores?

7   A.   Yes.

8   Q.   And in order for the scores to have any

9   meaning, are they plotted on some kind of a

10   distribution graph?

11   MR. POPEO: Objection.

12   THE DEPONENT: No.   They were just used

13   as absolute values.

14   BY MS. FLEMING:

15   Q.   As absolute values.   And how do you --

16   what's the next step in the speech recognition

17   process once those scores are computed?

18   MR. POPEO: Objection.   I just want to

19   clarify -- not trying to step on your

20   question.   Are you talking about the

21   generic recognition process?

22   MS. FLEMING: All related to the work

23   that he wrote for ELVIS prototype.

24   THE DEPONENT: Okay.   From what I

1   remember, the way it works is --

2   MR. POPEO: And again, I caution you

3   not to disclose any trade secrets.

4   THE DEPONENT: So my recollection is

5   that after you compute the scores, what you

6   do in the search is you want to add them up

7   over time to get an accumulated score for a

8   whole hypothesis. Right. And now, from

9   time to time you might decide to just, you

10   know, remove the bottom of the score.

11   So if the scores are 1,005, 1,010,

12   1,015, it's the same as, I don't know, 2,

13   5, 15; so the thousands don't matter

14   because you only compare hypotheses against

15   each other. Whether I did that or not, I

16   don't remember.

17 BY MS. FLEMING:

18   Q. Now, in the answer that you just stated

19 for the record, did you withhold any trade

20 secret information from your answer?

21   MR. POPEO: Object to the form. You

22   can answer, if you can.

23   THE DEPONENT: No, I don't think so.

24

Page 197

1   BY MS. FLEMING:

2   Q.   You don't think so, but you may have?

3   A.   What I was just talking about, about

4   adding the scores? No. There was nothing.

5   Q.   And what do you know about -- what do

6   you know about Gaussian curves as they relate

7   to speech recognition?

8   MR. POPEO: Object to the form of the

9   question. You may answer the question, if

10   you can.

11   THE DEPONENT: That's a term used to,

12   as far as I know, to describe the theory

13   about speech recognition where you have

14   mixtures and Gaussians. But in practical

15   terms, what it comes down to is you have

16   these two vectors and you compare them and

17   you compute a score based on some sort of a

18   distance measure.

19   BY MS. FLEMING:

20   Q.   And that distance measure, does it look

21   like a Gaussian curve?

22   MR. POPEO: Objection.

23   THE DEPONENT: I don't really know what

24   you mean by that.

Page 207

1   BY MS. FLEMING:

2   Q.   And that's how it works in a generic

3   recognizer; is that right?

4   A.   This is something that's also common to

5   most recognizers of this work.

6   Q.   And is that how it worked in the ELVIS

7   prototype?

8   A.   Yes.

9   Q.   Okay. And is that how it worked in the

10   Phoenix project?

11   MR. POPEO: Objection.

12   THE DEPONENT: Yes.

13   BY MS. FLEMING:

14   Q.   Okay. And those model states, do they

15   have an associated probability distribution

16   function?

17   MR. POPEO: Object to the form of the

18   question. You may answer, if you can.

19   THE DEPONENT: I don't know what you

20   mean by probability distribution function.

21   BY MS. FLEMING:

22   Q.   Have you ever heard that term?

23   A.   I think I have, yeah.

24   Q.   In what context?

Page 208

1   A.   I don't remember.

2   Q.   Have you ever heard the term PDF?

3   A.   I don't think so.   Oh, is it the

4   acronym for probability -- oh, okay.   Sorry.

5   MR. POPEO: That's okay.   You just

6   answer the best you can.   If you haven't

7   heard it, you haven't heard it.

8   THE DEPONENT: Okay.

9   BY MS. FLEMING:

10   Q.   Did the ELVIS prototype that you worked

11   on in your first year at Voice Signal

12   Technologies model duration of speech?

13   MR. POPEO: Object to the form of the

14   question.

15   THE DEPONENT: Can you rephrase the

16   question, please?

17   BY MS. FLEMING:

18   Q.   Well, are you familiar with the term

19   duration modeling?

20   A.   If by that -- I mean, I wouldn't use

21   this terminology, but if by that, you mean the

22   problem of -- well, if you're talking about

23   speech recognition, one of the problems is that

24   not everybody says the same word at the same

```
 1    BY MS. FLEMING:

 2        Q.   Yes.

 3        A.   Okay.  No, there is not.

 4        Q.   So ELVIS does not use duration

 5    modeling?

 6        A.   It does use duration modeling, but it

 7    does not use a certain probability assigned to

 8    whether it's better to stay within a state or

 9    transition to another state.

10        Q.   Why not?

11             MR. POPEO:   Object to the form of the

12        question.  You may answer, if you can do so

13        without divulging a trade secret.

14             THE DEPONENT:   I don't know.

15    BY MS. FLEMING:

16        Q.   You don't know or you can't divulge it

17    without involving a trade secret?

18        A.   I don't know.  I don't think it helps

19    much with the recognition process.  This is

20    just something that people tried to increase

21    accuracy and I don't know how much that helps

22    at all, if it helps at all.

23        Q.   Whether it helps or not, does the ELVIS

24    prototype use that type of duration modeling?
```

Page 212

1   MR. POPEO: Objection. Asked and

2   answered.

3   THE DEPONENT: No.

4   BY MS. FLEMING:

5   Q. It doesn't?

6   A. It doesn't.

7   Q. But it uses duration modeling?

8   MR. POPEO: Objection.

9   THE DEPONENT: Yes. That's what the

10   hidden Markov model is all about.

11 BY MS. FLEMING:

12   Q. How did the ELVIS prototype model

13 duration?

14   MR. POPEO: Object to the form of the

15   question. You can answer, if you can

16   without divulging trade secrets.

17   THE DEPONENT: This is the process that

18   I just described.

19 BY MS. FLEMING:

20   Q. And the process you just described --

21   A. It's the basic --

22   MR. POPEO: Generic.

23   THE DEPONENT: Well, it's the way in

24   which hidden Markov models work. And these

Page 214

1   that your testimony is that the ELVIS prototype

2   did not employ that kind of duration modeling,

3   that is, with the penalties and the

4   probabilities?

5   MR. POPEO: Objection.   Asked and

6   answered.   You may answer again.

7   THE DEPONENT: Right.   So -- it did

8   not.

9   BY MS. FLEMING:

10   Q.   It did not?

11   A.   It did not employ this penalties in the

12   transitions.

13   Q.   Now, I asked you earlier if you were

14   familiar with the term mixture modeling; do you

15   remember that?

16   A.   Yes.

17   Q.   Okay.   Does mixture modeling employ the

18   use of triphone clustering?

19   MR. POPEO: Object to the form of the

20   question.   You can answer if you can.

21   THE DEPONENT: I don't understand the

22   question.

23   BY MS. FLEMING:

24   Q.   So I take it if I asked you if mixture

Page 218

1   that describes.

2   Q.   What's your understanding of it?

3   MR. POPEO: Objection. You can provide

4   your understanding.

5   THE DEPONENT: Okay. My understanding

6   is that it's a name for one of Voice

7   Signal's products, but I don't know exactly

8   what's in there.

9   BY MS. FLEMING:

10   Q.   During the time you were employed by

11   Voice Signal Technologies, do you know if ELVIS

12   was ever licensed to anyone?

13   MR. POPEO: Objection to the form of

14   the question. If you know.

15   THE DEPONENT: So that's during my

16   entire time of --

17   BY MS. FLEMING:

18   Q.   Yes.

19   MR. POPEO: Let's answer within the

20   first 12 months of your employment, please.

21   The question is do you know?

22   THE DEPONENT: Do I know if it was

23   commercially employed?

24

Page 222

1   questions, and of course, if you can't answer a

2   question because you haven't read the document,

3   please let me know that.

4   A.   Okay.

5   Q.   Does this application for an invention

6   describe any product of Voice Signal

7   Technologies?

8   MR. POPEO: Object to the form of the

9   question. The document speaks for itself.

10   But you can answer it if you can.

11   THE DEPONENT: I'm sorry. Can you ask

12   me the question again?

13   BY MS. FLEMING:

14   Q.   Sure. You're a co-inventor on this

15   patent application; is that right?

16   A.   Right.

17   Q.   And do you know whether this patent --

18   well, do you know whether this patent or the

19   invention that's described in the patent

20   describes any product of Voice Signal

21   Technologies?

22   MR. POPEO: Object to the form of the

23   question. You may answer.

24   THE DEPONENT: I'm not familiar with

Page 224

1   recording and playback." Do you see that?

2   A. Yes.

3   Q. Did I read that accurately?

4   A. I think so, yeah.

5   Q. Having read the abstract with me, can

6   you tell me what contributions to this patent

7   application you, yourself, have made?

8   MR. POPEO: Object to the form of the

9   question. And I object to the extent that

10   you read from the abstract, but not from

11   the claims of the patent application,

12   itself. But if you can answer the

13   question, you may do so.

14   THE DEPONENT: This is -- I don't think

15   I really can answer this question, what

16   specific contributions I made. I mean, if

17   you look at the abstract, this covers a

18   whole variety of things; some of them I

19   have some vague understanding what they

20   describe, and others, I just have no idea

21   what they are.

22   BY MS. FLEMING:

23   Q. Well, let's go through them and see

24   what you have a vague understanding of.

Page 226

1   THE DEPONENT: I'm sorry; can you

2   rephrase that?

3   BY MS. FLEMING:

4   Q. Sure. Did you make some contributions

5   at Voice Signal Technologies about the

6   development of that correction mode?

7   MR. POPEO: Object to the question.

8   Are you now talking generically at Voice

9   Signal Technologies rather than with

10   respect to the claims of this patent?

11   MS. FLEMING: No, with respect to this

12   patent.

13   MR. POPEO: So just focus with respect

14   to contributions which you may have made on

15   the claims of the patent application.

16   THE DEPONENT: Okay. So if you're

17   talking about the actual user interface,

18   then I don't think I made any contribution

19   there.

20   BY MS. FLEMING:

21   Q. Okay. Is this an application for a

22   user interface?

23   MR. POPEO: Objection. If you know.

24   THE DEPONENT: To me, it looks like

Page 229

1   you see that?

2   A.   Yes.

3   Q.   What does that mean to you?

4   MR. POPEO: Object to the form of the

5   question.   The document speaks for itself.

6   If you can, answer it.

7   THE DEPONENT: I don't know what that

8   means.

9   BY MS. FLEMING:

10   Q.   You don't know.   How about the next

11   one: "Responding to the generation of the

12   first user input by performing

13   large-vocabulary, recognizing on one or more

14   utterances in a prior language,

15   context-dependent mode, which recognizes at

16   least the first word of such recognition,

17   depending in part on language model context

18   created by a previously recognized word."   Do

19   you see that?

20   A.   Yes.

21   Q.   Do you understand what that means?

22   MR. POPEO: Same objection.   This is a

23   legal document which speaks for itself.

24   You can answer it, if you can.

Page 230

1   THE DEPONENT: So what it might mean,

2   but this is just really speculation, is

3   there might be some context in which --

4   allows you to use a language model score

5   based on what the previous word on the

6   screen is.

7   BY MS. FLEMING:

8   Q. Did you, Dr. Grabherr, make any

9   contributions to this patent or this invention

10 that are described in that section that I just

11 read to you and you just testified to about?

12   MR. POPEO: Object to the form of the

13   question.

14   THE DEPONENT: I can't really --

15   MR. POPEO: If you recall, you may

16   answer.

17   THE DEPONENT: I can't -- I can't

18   really tell what that is, what it means. I

19   mean, I don't know for sure what this

20   really is talking about.

21 BY MS. FLEMING:

22   Q. And am I correct that your

23 understanding of looking at this patent

24 application is that this is an application for

Page 232

1   Q. Okay. And would you agree with me that

2   you were sent a copy of this electronic mail?

3   A. Yes, that's what it looks like.

4   Q. Your name is down there as a recipient,

5   isn't it?

6   A. Yes.

7   Q. And this electronic mail indicates --

8   well, in the electronic mail, Mr. Gillick

9   states, "We are presently working on an ELVIS

10 patent that we would like to file by early in

11 September"; is that right?

12   A. Yes.

13   Q. And the purpose of the meeting is "To

14 either identify novel technical characteristics

15 in our current implementation of ELVIS or to

16 come up with other novel ideas that would be

17 important contributions to ELVIS." He goes on

18 to say, "We are specially interested in

19 innovations that facilitate large-vocabulary

20 recognition in a hand-held device with flash."

21 Did I read that accurately?

22   A. Yes.

23   Q.   Is this electronic mail inviting you

24 to a meeting?

Page 233

1   MR. POPEO: Object to the form of the

2   question. Document speaks for itself. But

3   you can answer, if you know.

4   THE DEPONENT: That's what it looks

5   like.

6   BY MS. FLEMING:

7   Q. And do you recall attending such a

8   meeting where the ELVIS patent was discussed?

9   A. I don't remember.

10   Q. You don't remember. Do you recall

11 participating in any meetings in which any

12 patents of Voice Signal Technologies were

13 discussed?

14   MR. POPEO: Object to the form of the

15   question.

16   THE DEPONENT: Within the duration of

17   the first year?

18   MR. POPEO: Yes.

19 BY MS. FLEMING:

20   Q. If that's how you intend to answer the

21 question.

22   MR. POPEO: That is how he's instructed

23   to answer the question.

24   THE DEPONENT: Okay. In the first

Page 237

1   it's still there.

2   BY MS. FLEMING:

3   Q.   And personal digital assistants have

4   technology for flash as well, don't they?

5   MR. POPEO: Object to the form of the

6   question.   You may answer it, if you know.

7   THE DEPONENT: I don't know.

8   BY MS. FLEMING:

9   Q.   Mini computer?

10   A.   Mini computers?

11   MR. POPEO: Same objection.

12   BY MS. FLEMING:

13   Q.   You don't know what a mini computer is?

14   A.   No.

15   Q.   Flash technology used on personal

16   computers?

17   A.   Probably not.

18   Q.   So your testimony is flash technology

19   is only used on cell phones?

20   MR. POPEO: Objection.

21   THE DEPONENT: That's what I believe,

22   yeah.

23   BY MS. FLEMING:

24   Q.   On what do you base that belief?

Page 238

1   A.   Well --

2   MR. POPEO: Object to the form.

3   Answer, if you can.

4   THE DEPONENT: Okay. So you need

5   permanent -- so flash is some sort of a

6   kind of like a permanent storage, right.

7   So it's some sort of an attempt to make up

8   for the nonexistent hard disk drive; right.

9   And so on a cell phone, it makes

10   perfect sense to have flash there, because

11   you do want to store certain things, data,

12   the pictures you just took or whatever,

13   somewhere where they don't get lost if you

14   turn the cell phone off.

15   Now, it wouldn't make such sense to use

16   this technology on a PC, because usually

17   these things are not huge and it's much,

18   much cheaper to have a large hard disk

19   drive where you can store all your data and

20   it's going to still be there, even if you

21   turn it off.

22   On the PDA, I'm not sure because what

23   you do is you have a lot of memory anyway

24   already there, whether it makes sense to

Page 239

1   have it, I don't know, whether they have it

2   or not, I don't know.

3   BY MS. FLEMING:

4   Q.   You just don't know?

5   A.   I just don't know.

6   Q.   And you are -- let me just ask you.

7   You did not -- or did you communicate to Mr.

8   Bob Roth any novel technical characteristics in

9   the current implementation of ELVIS?

10   MR. POPEO: Object to the form.

11   Answer, if you recall, please.

12   THE DEPONENT: I don't remember.

13   BY MS. FLEMING:

14   Q.   And did you communicate to Mr. Roth any

15   novel ideas that would be important

16   contributions to ELVIS?

17   MR. POPEO: Same objection.

18   THE DEPONENT: I don't remember.

19   BY MS. FLEMING:

20   Q.   Did you ever communicate to Mr. Bob

21   Roth in your first year of employment at Voice

22   Signal Technologies?

23   A.   Communicate, meaning talking?

24   Q.   Any communication.

Page 244

1   MR. POPEO: I object. The witness is

2   instructed only to disclose those matters

3   on which he worked during the 12-month

4   period after he was first hired by the

5   company.

6   BY MS. FLEMING:

7   Q. Can you answer that question?

8   MR. POPEO: If you know, please.

9   THE DEPONENT: So in the first year, I

10   don't remember what I worked on with him.

11   I don't remember when he started either,

12   so --

13   BY MS. FLEMING:

14   Q. At any time that you worked at Voice

15   Signal Technologies, do you remember working

16   with Mr. Yamron on particular projects?

17   A. Yes.

18   Q. You do?

19   A. I remember -- sure, I don't remember

20   all of it, but I remember particular things.

21   Q. Is there any particular piece of work

22   that you can testify to today having worked on

23   with Mr. Yamron at Voice Signal Technologies?

24   MR. POPEO: Object to the form, which

Page 248

1   design document. And he raises a few points

2   about the master wordlist design in general.

3   It was not uncommon at Voice Signal to discuss

4   certain things. So you were not actually

5   working on something, but you were talking

6   about something.

7   Q. Is it fair to say he was eliciting

8   answers from you about some of his questions

9   here?

10   MR. POPEO: Object to the form of the

11   question. If you know the answer to that

12   question, you can answer.

13   THE DEPONENT: Well, I don't remember.

14   Just by reading it, this is what it looks

15   like.

16   BY MS. FLEMING:

17   Q. Do you remember if you responded to his

18   electronic mail?

19   A. I don't remember.

20   Q. He asks in the first bullet of his

21   comments here, do these formatting properties

22   belong in master wordlist, and if not, where do

23   they go? Do you see that?

24   A. Yes.

Page 249

1   Q.   Do you know what's prompting him to ask

2   that question?

3   MR. POPEO: Object to the form of the

4   question. You're asking whether this

5   witness knows what prompted Jon Yamron to

6   ask that particular question?

7   MS. FLEMING: Yes.

8   MR. POPEO: If you know the answer, you

9   may answer.

10   THE DEPONENT: I don't remember.

11   BY MS. FLEMING:

12   Q.   And you can't tell from the text that's

13   written above his question what's prompting him

14   to ask that question?

15   MR. POPEO: Same objection. Don't

16   guess. If you know, you may answer.

17   THE DEPONENT: I would have to guess.

18   BY MS. FLEMING:

19   Q.   And the second bullet, Mr. Yamron

20   states, "We should be cautious about not

21   hard-coding restrictions on the ranges of

22   various quantities." Do you see that?

23   A.   Yes.

24   Q.   Then he says "e.g., unigram scores,

Page 250

1   class IDs"?

2   A.   Yes.

3   Q.   What's your understanding of unigram

4   scores?

5   MR. POPEO: Objection.   You may answer.

6   THE DEPONENT: I know what a unigram

7   score is, which is a form of language model

8   score or it's derived from a probability.

9   Now, again, I can just read this and then

10   try to make a guess on what he is talking

11   about.

12   BY MS. FLEMING:

13   Q.   Well, I don't want you to guess, but

14   I'd like to know what your understanding of the

15   phrase "class IDs" refers to, or class I-D-S?

16   A.   That I don't know.

17   Q.   You don't know.   Is there any reason

18   that Mr. Yamron would have included you in this

19   electronic mail distribution listed based on

20   the fact that this discussed a design document?

21   MR. POPEO: Object to the form of the

22   question.   If you know, you can answer.

23   THE DEPONENT: It's possible.   I don't

24   remember.

Page 258

1   tokenization mean anything to you?

2   MR. POPEO: Object to the form. You

3   can answer.

4   THE DEPONENT: Tokenization is -- okay.

5   This is my -- what it could be. So

6   tokenization in this context could refer to

7   text preprocessing, or postprocessing for

8   that matter.

9   BY MS. FLEMING:

10   Q. Does it have any significance in speech

11   recognition?

12   MR. POPEO: Object to the form of the

13   question. If you know, please.

14   THE DEPONENT: Well, what -- it's used

15   for different things really. So it's --

16   from what I remember, it's the technique of

17   taking, for instance a text file with

18   punctuations and separating the

19   punctuations from the preceding words

20   because there's no space between them,

21   something like that. It could just mean

22   you have some stream, cut it up into

23   certain pieces.

24

Page 266

1   Q. Do you remember receiving a copy of

2   this document?

3   A. I don't remember receiving it.

4   Q. Do you remember participating in a

5   meeting about the master wordlist on May 8th,

6   2001?

7   MR. POPEO: Object to the form.

8   THE DEPONENT: I don't remember.

9   BY MS. FLEMING:

10   Q. Okay. In the text of the communication

11 from the person whose name is redacted, it

12 says, "Can we get together briefly, say for a

13 half hour at 4:00 tomorrow to talk about this

14 and to resolve the issue of associating unigram

15 scores with pronunciations." Did I read that

16 correctly?

17   A. Yes.

18   Q. And then in parentheses following that,

19 it says, "LG and MG have differing opinions

20 about this"; is that right?

21   A. Yes.

22   Q. Is the MG referred to there you?

23   MR. POPEO: Objection. If you know.

24   THE DEPONENT: Well, I mean, I don't

1   means.

2   BY MS. FLEMING:

3   Q.   The very first line on the document

4   underneath the date says, "some initial project

5   assignments," right?

6   A.   Right.

7   Q.   Then your name appears?

8   A.   Yes.

9   Q.   And there are three lines of text, one

10   I just read, "implement on-line implementation

11   via"?

12   A.   Right.

13   Q.   The second says, "implement on-line

14   adaptation"?

15   A.   Yes.

16   Q.   And the third says, "adding and

17   removing words from pronunciation tree,"

18   correct?

19   A.   Yes.

20   Q.   Does that text indicate to you any

21   project assignments you had during your first

22   year of employment at Voice Signal

23   Technologies?

24   MR. POPEO: Object.   If you recall.

Page 274

1   THE DEPONENT: I don't remember what

2   this document was about.

3 BY MS. FLEMING:

4   Q. You don't remember or you've never seen

5 this document?

6   MR. POPEO: Objection.

7   THE DEPONENT: I don't remember having

8   seen this document.

9 BY MS. FLEMING:

10   Q. Does the word -- does the phrase

11 "adding and removing words from pronunciation

12 tree" have any significance to you?

13   MR. POPEO: As a generality or in the

14   context of this document?

15 BY MS. FLEMING:

16   Q. In the context of some project

17 assignments you might have received at Voice

18 Signal Technologies.

19   A. I'm not sure.

20   Q. What aren't you sure about?

21   A. I think -- well, again, I remember none

22 of this. So I mean, I can just tell you that

23 if you give me the sentence, remove words from

24 pronunciation, adding and removing words from

Page 276

1   BY MS. FLEMING:

2   Q.   You don't remember performing that

3   task?

4   A.   Yes.

5   Q.   Okay.   Now, I want to go way back to

6   Exhibit 2 and ask you again to turn to the page

7   that's continuing the job description, which is

8   marked with Bates number 03738.

9   A.   Yes.

10   Q.   Okay.   You will recall earlier we were

11   discussing in detail the job description.

12   A.   Yes.

13   Q.   And I asked you about the specific work

14   that you did at Voice Signal Technologies.   I

15   want to -- and you answered my questions with

16   respect to the first and second sentences of

17   this paragraph.

18   I want to ask you what work did you do

19   specifically to contribute to the development

20   of novel approaches for improving human

21   interfaces to global information

22   infrastructure?

23   MR. POPEO: Object to the form of the

24   question.   You may answer that, if you can.

Page 286

1   Q.   Can you import or port sections of

2   source code file into a data file like an LM

3   design text file?

4   MR. POPEO: Object to the form of the

5   question.   If you know, please.

6   THE DEPONENT: These are just files.

7   You can rename to anything you like, any

8   source code file can be renamed to any

9   other file.

10   BY MS. FLEMING:

11   Q.   Let me make sure you understand my

12   question.

13   A.   Okay.

14   Q.   You've just described source code files

15   that look very different from what this

16   document looks like.

17   A.   Right.

18   Q.   Can you copy source code lines from the

19   source code file and put it into a document

20   like the one that's marked Exhibit 11?

21   A.   Yes, you can.

22   Q.   You can?

23   A.   Yeah.

24   Q.   Okay.   You named one characteristic of

Page 298

1   you know you didn't do any work in it?

2   MR. POPEO: Object to the form of the

3   question. If that question is susceptible

4   to an answer, you can answer.

5   THE DEPONENT: I said I don't know what

6   this specifically refers to. It could be a

7   number of things. Now, I can tell you what

8   I think it could be.

9   MR. POPEO: Wait a second. The

10   question she's asked is how you know that

11   you didn't do any work on it? So if you

12   can answer that question, you may answer.

13   THE DEPONENT: Right. But the answer

14   is, if I tell you what it could be, then

15   those were things I did not work on.

16   BY MS. FLEMING:

17   Q. What could it be that you didn't

18   work on?

19   A. It could be that you have a language

20   model and you have some text provided by the

21   user of the speech recognizer, and in order to

22   improve recognition, you can use this text to

23   modify the language model, and therefore, more

24   -- make it more closer to the speaking style or

Page 300

1   be a module.

2   Q.   What does that module do?

3   MR. POPEO: Object to the form of the

4   question. Don't guess, please.

5   THE DEPONENT: I don't know.

6   BY MS. FLEMING:

7   Q.   You don't know the purpose of that

8   module?

9   A.   I could guess, but --

10   Q.   The VSTUtil module you referred to, is

11   that part of the ELVIS speech recognition?

12   MR. POPEO: Objection. Don't guess,

13   please.

14   THE DEPONENT: I don't remember.

15   BY MS. FLEMING:

16   Q.   Do you know if it's part of the user

17   interface?

18   MR. POPEO: Same objection.

19   THE DEPONENT: I don't remember.

20   BY MS. FLEMING:

21   Q.   Who would know at Voice Signal

22   Technologies what the VSTUtil is?

23   MR. POPEO: Object to the form of the

24   question. If you know who would know,

Page 301

1   answer, but don't guess.

2   THE DEPONENT: I don't know.

3 BY MS. FLEMING:

4   Q. Who would have known what VSTUtil was

5 during the time that you worked at Voice Signal

6 Technologies?

7   MR. POPEO: Same objection.

8   THE DEPONENT: I don't know.

9 BY MS. FLEMING:

10   Q. Was Paul Silvis involved in packaging

11 software and releasing it at Voice Signal

12 Technologies?

13   MR. POPEO: Objection. Only if you

14   know, please.

15   THE DEPONENT: I don't remember.

16   MS. FLEMING: Let's mark this one 13.

17   (Exhibit No. 13 marked for

18   identification.)

19 BY MS. FLEMING:

20   Q. Dr. Grabherr, the reporter has handed

21 you another document that's part of the Voice

22 Signal production. It's Bates marked VST

23 04051. This is an e-mail, electronic mail,

24 from Mr. Larry Gillick to the research at Voice

Page 303

1   A.   Yes.

2   Q.   Okay.   But it is true that the ELVIS

3   project was in existence prior to April 19th,

4   2001, wasn't it?

5   A.   Yes.

6   Q.   Okay.   And what was Mr. Gillick's role

7   with respect to the ELVIS project?

8   MR. POPEO: Objection.   If you know,

9   please.

10   THE DEPONENT: Larry Gillick was head

11   of the Core Technology Group at Voice

12   Signal; and so as -- in that role, he was

13   involved with the ELVIS project.

14   BY MS. FLEMING:

15   Q.   And was Paul Silvis the project

16   coordinator?

17   MR. POPEO: Object to the form of the

18   question.   Don't guess, please.

19   THE DEPONENT: I don't know.

20   BY MS. FLEMING:

21   Q.   Was Paul Silvis involved in the ELVIS

22   project?

23   MR. POPEO: Same objection.   If you

24   know.   Please don't guess.

Page 313

1   recognizer; is that the speech recognizer

2   that's referring to?

3   A.   I would assume so.

4   Q.   That's the speech, the ELVIS speech

5   engine?

6   A.   I can -- I don't know what exactly this

7   is referring to. It might actually refer to a

8   part of the speech recognition engine.

9   Q.   What makes you think it -- it's related

10   to a part of the engine?

11   A.   I'm not saying that it does. I just

12   can't rule it out.

13   Q.   In April of 2001, do you recall

14   specifically what your role was in connection

15   with the ELVIS project?

16   MR. POPEO: If you recall.

17   THE DEPONENT: I don't remember.

18   BY MS. FLEMING:

19   Q.   Okay. Does the fact that your name is

20   next to "recognizer" imply anything about the

21   kind of work you did in April of 2001 when on

22   the ELVIS project?

23   MR. POPEO: Object to the form. You

24   can answer, if you understand that.

Page 322

1   CERTIFICATE

2

COMMONWEALTH OF MASSACHUSETTS

3   SUFFOLK, SS

4   I, Dana Welch, Registered Professional

5   Reporter and Notary Public in and for the

6   Commonwealth of Massachusetts, do hereby

7   certify:

8   That MANFRED G. GRABHERR, the witness

9   whose deposition is hereinbefore set forth, was

10 duly sworn by me and that such deposition is a

11 true record of my stenotype notes taken in the

12 foregoing matter, to the best of my knowledge,

13 skill and ability.

14   IN WITNESS WHEREOF, I have hereunto set

15 my hand this 16th day of June, 2005.

16

17   DANA ULRICH WELCH
             _____

             . Dana Welch, RPR

18   Registered Professional Reporter

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